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EXAMINER
PAUL, DISLER

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/684,222	DEVANTIER ET AL.
	Examiner	Art Unit	
	DISLER PAUL	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 August 2009</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-8;10-15;17-23;25-32;34-35;37-49;52-74;76-87;91-104;107-113;117-135</u> is/are pending in the
application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-8;10-15;17-23;25-32;34-35;37-49;52-74;76-87;91-104;107-113;117-135</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

The applicant's amended claims as in (1, 15, 25, 27, 62, 81, 107, 111) have further
been considered and are rejected over prior art.

Applicant's amendment necessitated the new ground(s) of rejection presented in
this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37
CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE
MONTHS from the mailing date of this action. In the event a first reply is filed within
TWO MONTHS of the mailing date of this final action and the advisory action is not
mailed until after the end of the THREE-MONTH shortened statutory period, then the
shortened statutory period will expire on the date the advisory action is mailed, and any
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
the advisory action. In no event, however, will the statutory period for reply expire later
than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-8; 10; 14-15; 17-20; 25; 27-30; 32; 34-35; 37-44; 46-49; 52-53; 62-66;

68-73; 76-77; 81 -87; 96; 98-99; 101; 107-109; 111-113; 117; 119 are rejected under

35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al. (2003/0179891) and

Tagami et al. (US 5,745,586).

Re claim 1, Rabinowitz et al. disclose an audio system comprising a

configuration, the configuration selected based on a method

comprising: generating acoustic signals from at least one loudspeaker

placed at potential loudspeaker locations and recording transfer

functions at a plurality of listening positions (fig.1,5 (14,16);

fig.3 (20); par [0010,0021; 0027]/microphone and speakers in various

locations for generating and pick up such generated sound from such

various listening locations); determining potential configurations of

the audio system (fig.5 (14-1; 14-n); fig.34 (43); par [0020, 0022,

0029; 0033]/potential loudspeaker configuration in the room as in

alterations of the speakers, and replacing components and also volume

and tone control configuration) and modifying the transfer functions

based on the potential configurations so that predicted transfer

functions are generated at each of at least two of the plurality of

listening positions for each of the potential configuration of the

audio system, the predicted transfer function representing simulations

for the potential configuration of the audio system (fig.1 (18, 20);

fig.4(48-59); par [0021-0023,0027]/generating desired equalized

frequency for different user locations with microphone from the
loudspeaker is read on the predicted transfer function).

    While, Rabinowitz disclose of having the predicted transfer
function, However, Rabinowitz et al. never disclose of such accessing
a criterion by which to statistically analyze the predicted signal.
But, Tagami et al. disclose of a system wherein the similar concept of
accessing a criterion by which to statistically analyze a predicted
signal (fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized
audio function is analyzed using variations of criterion as noted in
the figures) so as to easily enable a listener to determine how to
adjust the equalizer in obtaining desired sound quality in short-time
span. Thus, it would have been obvious for one of the ordinary skill
in the art to have modified the prior art with implementing such
accessing a criterion by which to statistically analyze the predicted
signal so as to easily enable a listener to determine how to adjust
the equalizer in obtaining desired sound quality in short-time span.

    The combined teaching of Rabinowitz et al. and Tagami et al. as a
whole, would have further teach of such statistically analyzing using
the criterion across at least one frequency of the predicted transfer
functions for the at least two of the plurality of listening positions
(fig.3-5).

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, would have further teach of such selecting a configuration to further including such specific as in selecting a configuration to improve for the criterion at the at least two of the plurality of listening positions based on the statistical analysis (par [0033]/speaker changes and remodeling configuration and replacing component in doing the equalization patterns).

Re claim 2, The audio system of claim 1, where the configuration comprises at least one parameter that affects acoustical performance of the audio system (par [0029, 0033]/parameter as in volume and tone control) ; where determining potential configurations comprises determining potential values for the parameter (par [0029]) and where modifying the transfer functions comprises modifying the transfer functions based on the potential values for the parameter; and where selecting a configuration comprises selecting a value for the parameter (fig.4 (48, 52); par [0029; 0033]/speakers adjustment and volume control in modifying the transfer function).

Re claim 3, the audio system of claim 2, wherein determining potential values for the parameter comprises to input potential values for the parameter (fig.4 (48, 52); par [0029]).

Re claim 4, the audio system of claim 2, where the configuration comprises at least two parameters that affect acoustical performance of the

audio system; and where determining potential configurations of the audio

system comprise determining potential combinations of potential values of the

parameters (fig.4 (48, 52); par [0029; 0033]/speakers with replacing the and

volume and tone control).

    Re claim 5, the audio system of claim 2, where the parameter is

selected from the group consisting of positions of the loudspeakers, number

of loudspeakers, types of loudspeakers, and correction factors (par [0029;

0033]).

Re claim 6, the audio system of claim 2, where the parameter comprises

positions of the loudspeakers; and where determining potential configurations

comprises: determining potential positions of the loudspeakers (par [0021;

0029]/equalization with change of speakers position); and generating

potential combinations of speakers based on the potential positions of the

loudspeakers; and where modifying the transfer functions comprises super-

positioning of the transfer functions based on the potential combinations of

speakers (fig.4 (54); par [0031; 0033]/speakers positions may be combined).

RE claim 7, the audio system of claim 6, where the at least one parameter

further comprises correction factors; and where the potential configurations

are based on the potential combinations of speakers and the potential values

for the correction factors (fig.3; fig.4 (48, 52); par [0029, 0033]/tone and

volume parameter).

Re claim 8, the audio system of claim 1, where recording transfer functions
at a plurality of listening positions comprises placing a microphone at each
of the listening positions and recording the transfer functions (fig.3; par
[0026,0036]/microphones for listening positions).

RE claim 10, the audio system of claim 9, wherein having plurality of
frequencies as desired(fig.3; par [0029]).

    Similarly, it would have been obvious for one of the ordinary skills in
the art to have modified such frequencies as further including such
frequencies as being less than 120 Hz with producing no unexpected result
based on the designer's need.

  RE claim 14, the audio system of claim 1, wherein selecting a configuration
comprises recommending a plurality of potential configurations and manually
selecting one of the plurality of potential configurations (par [0029]/to
manually select the volume and tone configurations).

    Similarly, it would have been obvious for one of the ordinary skills in
the art to have tried in modifying such recommending such configuration as
further include such automatically recommending the configuration so as to
determined the equalized pattern without a user input.

RE claim 15, Rabinowitz et al. disclose of a machine readable medium having
software for causing a machine to execute a method, the machine readable
medium comprising: instructions for generating acoustic signals from at least
one loudspeaker placed at potential loudspeaker locations; instructions for

recording transfer functions for the generated acoustic signals at a

plurality of listening positions (fig.1,5 (14,16); par [0010,0021]);

instructions for determining potential configurations of the audio system

(fig.5 (14-1; 14-n); par [0020, 0022, 0029; 0033]/potential

loudspeaker configuration in the room as in alterations of the

speakers, and replacing components and also volume and ton control

configuration); instructions for modifying the transfer functions based on

the potential configurations so that predicted transfer functions are

generated at each of at least two of the plurality of listening positions for

each of the potential configuration of the audio system, the predicted

transfer functions representing simulations for the potential configurations

of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-

0023,0027]/desired equalized frequency for different user locations in

determining the predicted transfer function).

 While, Rabinowitz disclose of having the predicted transfer function,

however, Rabinowitz et al. fail to disclose of such instructions for

accessing a criterion by which to statistically analyze the predicted

audio functions. But, Tagami et al. disclose of a system wherein the

similar concept of having instructions for accessing a criterion by

which to statistically analyze the predicted audio functions (fig.3-4;

col.7 line 50-67; col.8 line 17-53/the equalized audio function is

analyzed using variations of criterion as noted in the figures) so as

to easily enable a listener to determine how to adjust the equalizer

in obtaining desired sound quality in short-time span. Thus, it would

have been obvious for one of the ordinary skill in the art to have

modified the prior art with implementing such instructions for

accessing a criterion by which to statistically analyze the predicted

audio functions so as to easily enable a listener to determine how to

adjust the equalizer in obtaining desired sound quality in short-time

span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a

whole, would have further teach of such instructions for statistically

analyzing using the criterion across at least one frequency of the

predicted transfer functions for the at least two of the plurality of

listening positions (fig.3-5).

Re claims 17-18, 20 have been analyzed and rejected with respect to claims 3-

4, 10.

Re claim 19, the machine readable medium of claim 15, where the statistical

analysis is across a plurality of frequencies of the predicted transfer

functions (Tagami; fig.3-5)

Re claim 25, Rabinowitz et al. disclose of a computer system for

analyzing potential configurations in an audio system, the computer

system comprising: a memory storing transfer functions recorded at a

plurality of listening positions in the audio system (fig.5 (20); par

[0020]), and a processor in communication with the memory the

processor (fig.1 (20, 18); determining potential configurations of

the audio system (fig.5 (14-1; 14-n); par [0020, 0022, 0029;

0033]/potential loudspeaker configuration in the room as in

alterations of the speakers, and replacing components and also volume

and ton control configuration); and modifying the transfer functions

based on the potential configurations so that predicted transfer

functions are generated at each of at least two of the plurality of

listening positions for each of the potential configurations of the

audio system, the predicted transfer function representing simulation

for the potential configuration of the audio system (fig.1 (18, 20);

fig.4(48-59); par [0021-0023,0027]/desired equalized frequency for

different user locations in determining the predicted transfer

function).

     While, Rabinowitz disclose of having the predicted transfer

function, however, Rabinowitz et al. fail to disclose of such

accessing a criterion by which to statistically analyze the predicted

audio functions. But, Tagami et al. disclose of a system wherein the

similar concept of accessing a criterion by which to statistically

analyze the predicted audio functions (fig.3-4; col.7 line 50-67;

col.8 line 17-53/the equalized transfer function is analyzed using

variations of criterion as noted in the figures) so as to easily

enable a listener to determine how to adjust the equalizer in

obtaining desired sound quality in short-time span. Thus, it would

have been obvious for one of the ordinary skill in the art to have

modified the prior art with implementing such accessing a criterion by
which to statistically analyze the predicted audio functions so as to
easily enable a listener to determine how to adjust the equalizer in
obtaining desired sound quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a
whole, would have further teach of such statistically analyzing using
the criterion across at least one frequency of the predicted transfer
functions for the at least two of the plurality of listening positions
(fig.3-5).

The combined teaching of Rabinowitz et al. and Tagami et al. as a
whole, would have further teach of such recommending at least one of
the potential configurations to improve for the criterion at the at
least two of the plurality of listening positions based on the
statistical analysis (par [0033]/speaker changes and remodeling
configuration and replacing component in doing the equalization
patterns).

Re claim 27, the method for selecting a configuration for an audio
system, the method comprising: recording transfer functions using at
least an audio sensor at a plurality of listening positions in the
audio system; determining potential configurations of the audio
system; modifying the transfer functions, using at least one

processor, based on the potential configurations so that predicted

transfer functions are generated at least two of the plurality of

listening positions for each of the potential configurations of the

audio system, the predicted transfer functions representing

simulations for the potential configurations of the audio system;

accessing a criterion from a memory by which to statistically analyze

the predicted transfer functions; statistically analyzing, using the

at least one processor, the predicted transfer functions using the

criterion at the at least two of the plurality of listening positions;

and selecting a configuration to improve for the criterion at the at

least two of the plurality of listening positions based on the

statistical analysis (see claim 1 rejection analysis).

Re claims 28-29 have been analyzed and rejected with respect to claims 2, 5.

Re claim 30, the method of claim 27, wherein the transfer functions measure

at least one acoustical property of the audio system (par [0027]/equalization

acoustic property).

Re claim 32, the method of claim 27, where the audio system comprises a

subwoofer (par [0022]).

Re claim 34, the method of claim 27, where the configuration comprises

potential loudspeaker locations; where recording transfer functions

comprises generating acoustic signals from the loudspeaker placed at

each of the potential loudspeaker locations (fig.1 (14); fig.3).

Similarly, the combined teaching of the combined teaching of
Rabinowitz et al. and Tagami et al. as a whole, further teach of being
able to select a configuration based on the statistical analysis
comprises selecting potential location for placement of the
loudspeakers in the audio system (par [0033]).

Thus, it would have been obvious for one of the ordinary skills
in the art to have tried in modifying such selecting configuration as
further including such wherein selecting a configuration based on the
statistical analysis comprises selecting less than all of the
potential loudspeaker locations for placement of loudspeakers in the
audio system so as to determined the equalization patterns for such
change of configurations.

Re claim 35, the method of claim 34, where generating acoustic signals from
the loudspeaker placed at each of the potential loudspeaker locations
comprises placing the loudspeaker at a first potential position and
controlling the audio system to generate an acoustic signal; and
where recording transfer functions at the plurality of listening positions
comprises placing a microphone at a first listening position and recording
the acoustic signal and placing the microphone at a second listening position
and recording the acoustic signal (fig.3; par [0024, 0031, 0033]).

Re claim 37, the method of claim 28, wherein determining potential values for
the parameter comprises selecting a discrete number of potential
configurations (par [0029;0033]).

Re claim 38, the method of claim 28, wherein determining potential values for
the parameter comprises selecting a range of potential values (fig.4 (48,
52);par [0029; 0033]).

RE claim 39; the method of claim 28, where the parameter comprises
loudspeaker locations; where recording transfer functions comprises
recording transfer functions at the listening positions with the
loudspeaker in each of the plurality of potential loudspeaker
locations; where determining potential configurations comprises
inputting a plurality of potential loudspeaker locations and
determining potential combinations of the potential loudspeaker
locations; and where modifying the transfer functions comprises
combining the transfer functions for the listening positions for each
of the potential combinations of loudspeaker locations to generate the
predicted transfer functions (fig.3; par [0029; 0033]).

    Re claim 40, the method of claim 39, where the plurality of
loudspeaker locations comprises a first potential loudspeaker location
and a second potential loudspeaker location; where recording transfer
functions comprises: recording a first transfer function at a first

listening position with the loudspeaker at the first potential

loudspeaker location; recording a second transfer function at the

first listening position with the loudspeaker at the second potential

loudspeaker location (fig.1 (14) ; fig.3; par [0033]record transfer

functions at varying speaker locations) and recording a third transfer

function at a second listening position with the loudspeaker at the

first potential loudspeaker location; and recording a fourth transfer

function at the second listening position with the loudspeaker at the

second potential loudspeaker location (fig.1 (14) ; fig.3; par

[0033]record transfer functions at varying speaker locations) and

combining the transfer function comprises: combining the transfer

functions (par [0031]/all data may be combined).

    Similarly, it would have been obvious for one of the ordinary

skills in the art to have such combined data as additionally including

combining the first transfer function and the second transfer

function; and combining the third transfer function and the fourth

transfer function so as to create the equalize patterns.

    The combined teaching of Rabinowitz et al. and Tagami et al. as a

whole, would have further disclosed of such where statistically

analyzing the predicted transfer functions is based on the first

transfer function, the second transfer function, the third transfer

function, the fourth transfer function, the combined first and second

transfer function and the combined third and fourth transfer function

(fig.4 54); par [0031]/all data may be combined).

Re claim 41, the method of claim 40, where combining the first

transfer function and the second transfer function comprises

performing superposition of the first transfer function with the

second transfer function; and where combining the third transfer

function and the fourth transfer function comprises performing

superposition of the third transfer function with the fourth transfer

function (fig.3-4 (56); par [0031]/transfer functions at different

positions may be combined).

Re claim 42; the method of claim 27, where the configuration comprises

number of loudspeakers and where potential configurations comprise

potential numbers of loudspeakers (fig.1 (14-n); par [0033]/plurality

of speakers) and where modifying the transfer functions based on the

potential configurations comprises determining potential combinations

of loudspeakers at potential loudspeaker locations; the potential

combinations being equal to at least one of the potential number of

loudspeakers (fig.1 (14-6); par [0021]/modifying transfer function

based on the potential number of speakers) and combining the transfer

functions for each of the potential combinations to generate predicted

transfer functions for each of the potential combinations (par

[0031]/transfer function may be combined in determining the predicted

transfer function).

    Since, the combined teaching of Rabinowitz et al. and Tagami et

al. as a whole, further disclose of wherein selecting one of the

potential numbers of speakers for the predicted transfer function (par

[0033]/replacing speaker component or moving speakers). Thus, it would

have been obvious for one of the ordinary skills in the art to have

tried in modifying the selecting number of speakers with additionally

having such specific as in selecting one of the potential numbers of

speakers based on the statistical analysis so as to similarly realize

a desired sound quality within a short time span.

RE claim 43, the method of claim 28, where the parameter comprises

types of loudspeakers (par [0021]/the different type of loudspeakers

as in subwoofer and high and cross over loudspeakers); where

determining potential configurations comprises determining

combinations of potential types of loudspeakers at potential

loudspeaker locations (fig.3 (20); par [0027,0021]/different position

and having such different type of speakers); where recording transfer

functions comprises recording transfer functions at the listening

positions with each potential type of loudspeaker in each of the

plurality of potential loudspeaker locations (fig.3 (3)); fig.2; par

[0036]/recording such transfer function at different location); and

where modifying the transfer functions based on the potential

configurations comprises combining the transfer functions for the

listening positions for each of the combinations to generate predicted

transfer functions (par [0031]/transfer function may be combined in

determining the predicted transfer function).

Re claim 44, the method of claim 43, wherein the types of loudspeakers

comprises loudspeakers with different qualities (par [0021, 0027]).

Re claim 46, the method of claim 27, where the configuration comprises

correction factors; where potential configurations comprise potential

values for the correction factors; and where modifying the transfer

functions based on the potential configurations comprises modifying

the transfer functions for potential values for the correction factors

to generate predicted transfer functions for each of the potential

values (fig.3; fig.4 (48,52); par [0029]).

Re claim 47, the method of claim 46, where the correction factors

comprise gain, delay, and equalization (par [0029]; fig.3/gain and tone

inherently correct for frequency equalization and time varying delay signal).

Re claim 48, the method of claim 27, where the configuration

comprises a plurality of parameters; where determining potential

configurations comprises determining potential values for the

plurality of parameters and determining potential combinations of the

potential values of the parameters; where recording transfer functions

comprises recording transfer functions at the listening positions with

each type of potential loudspeaker in each of a plurality of potential

loudspeaker locations; and where modifying the transfer functions

based on the potential configurations comprises modifying the transfer

functions based on the potential combinations to generate predicted

transfer functions (fig.3; fig.4 (48,52); par [0029, 0033]/using

multiple configurations and at plurality of listening positions and

modified to determine the predicted function).

Re claim 52, the method of claim 27, where statistically analyzing the

predicted transfer functions comprises analyzing the predicted

transfer functions for each of the plurality of listening positions

(fig.3 (20); par [0027]).

Re claim 49 has been analyzed and rejected in regard to claim 10.

Re claim 53; The method of claim 27, where the statistical analysis indicates

consistency of the predicted transfer functions across the plurality of

listening positions (col.7 line 55-60; fig.3/sound with adjective such as

neutral as sound quality adjective).

Re claim 62, Rabinowitz et al. of a method for selecting a configuration

for an audio system, the method comprising: recording transfer functions a

plurality of listening positions in the audio system (fig. 3; fig.5 (16));

determining potential configurations of the audio system (fig.5 (14-1; 14-

n); par [0020, 0022, 0029; 0033]/potential loudspeaker configuration

in the room as in alterations of the speakers, and replacing

components and also volume and ton control configuration); modifying

the transfer functions based on the potential configurations in order to

generate so that predicted transfer functions are generated at each of at

least two of the plurality of listening positions for each of the potential

configurations of the audio system, the predicted transfer functions

representing simulations for the potential configurations of the audio system

fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized

frequency for different user locations with microphone from the

speaker is read on the predicted transfer function).

    However, Rabinowitz et al. fail to disclose of such wherein

accessing a criterion comprising efficiency by which to statistically analyze

the predicted transfer functions. But, Tagami et al. disclose of a system

wherein the similar concept of accessing a criterion comprising

efficiency by which to statistically analyze a predicted audio

functions signal (fig.3-4; col.7 line 50-67; col.8 line 17-53/the

equalized audio function is analyzed using variations of efficiency

criterion as noted in the figures) so as to easily enable a listener

to determine how to adjust the equalizer in obtaining desired sound

quality in short-time span. Thus, it would have been obvious for one

of the ordinary skill in the art to have modified the prior art with

implementing such accessing an efficiency criterion by which to

statistically analyze the predicted transfer functions as in

Robinowitz so as to easily enable a listener to determine how to

adjust the equalizer in obtaining desired sound quality in short-time

span.

    The combined teaching of Rabinowitz et al. and Tagami et al. as a

whole, wherein statistically analyzing the predicted transfer functions

using the criterion (Tagami; fig.3-5); and selecting a configuration based on

the statistical analysis to improve for the efficiency at the at least two of

the plurality of listening positions (par [0033]/different configurations may

be used in improving the predicted function and thus the criterion), and

where the statistical analysis indicates efficiency of the predicted transfer

functions at the plurality of listening positions (fig.3; par

[0027]/functions at plurality of listening positions).

Re claim 63, the method of claim 62, where efficiency is examined for

predetermined frequencies (tagami; fig.4-5).

   Re claim 64, the method of claim 63, where selecting a configuration based

on the statistical analysis comprises selecting a value for a parameter to

increase efficiency of the audio system in the predetermined frequencies

(fig.4 (43); par [0029]/audio and tone control may be used and inherently

will increase the audio signal efficiency).

Re claim 65, the method of claim 64, wherein the parameter comprises a

volume correction and wherein selecting a value to increase efficiency

comprises selecting a value that decreases the volume of at least one of the

loudspeakers in the audio system (fig.4 (43); par [0029]/volume and tone

control of the audio signal).

Re claim 66, the method of claim 27, wherein the statistical analysis

comprises an acoustic efficiency (Tagami; fig.4-5/sound quality).

Re claim 68, the method of claim 66, where selecting a configuration based

on the statistical analysis comprises selecting a value for a parameter to

increase acoustic efficiency of the audio system (fig.4 (43); par

[0029]/volume and tone control of the audio signal and inherently will help

to increase acoustic level).

RE claim 69, the method of claim 68, wherein the parameter comprises volume

Correction and wherein selecting a value to increase acoustic efficiency

comprises selecting a value that decreases the volume of at least one of the

loudspeakers in the audio system (fig.4 (43); par [0029]/volume and tone

control of the audio signal level).

Re claim 70, the method of claim 27, wherein the statistical analysis

indicates output of predicted transfer functions at the multiple listening

positions (fig.3 (20); par [0027]/the different positions).

Re claim 71, the method of claim 70, where output is examined for

Pre-determined frequencies (fig.4-5/audio signal may be measured at

predetermined frequencies).

Re claim 72, the method of claim 71, where selecting a configuration based on

the statistical analysis comprises selecting a value for a parameter to

increase output of the audio system in the predetermined frequencies (fig.4

(43); par [0029]/volume and tone control of the audio signal).

Re claim 73, the method of claim 72, wherein the parameter comprises volume

Correction and wherein selecting a value to increase output comprises

selecting a value that decreases the volume of at least one of the

loudspeakers in the audio system (fig.4 (43); par [0029]).

RE claim 76, the method of claim 27, where selecting a configuration

comprises manually selecting a configuration (par [0022]/the control may be

located on the head unit for manual adjustment).

Re claim 77, the method of claim 27, where selecting a configuration

comprises selecting a configuration (par [0022]), However, the combined

teaching of teaching of Rabinowitz et al. and Tagami et al. as a whole,

failed to disclose of the automatic configuration. But, it is noted the

concept of having the configuration as being automatic is merely an obvious

variation of the engineering design with producing no unexpected result.

Re claim 81, Rabinowitz et al. a machine readable medium having software

for causing a machine to execute a method, the machine readable medium

comprising: instructions for storing transfer functions recorded at a

plurality of listening positions in an audio system (fig.3; par [0027]);

instructions for determining potential configurations for the audio system

(fig.5 (14-1; 14-n); fig.34 (43); par [0020, 0022, 0029; 0033]);

instructions for modifying the transfer functions based on the potential

configurations so that predicted transfer functions are generated at at least

two of the plurality of listening positions, the predicted transfer functions

representing simulations for the potential configurations of the audio system

(fig.1 (18, 20); fig.4(48-59); par [0021-0023,0027]/desired equalized

frequency for different user locations with microphone from the

speaker is read on the predicted transfer function).

    But, Rabinowitz et al. fail to disclose of accessing a criterion by

which to statistically analyze the predicted transfer functions. But, Tagami

et al. disclose of a system wherein the similar concept of accessing a

criterion by which to statistically analyze the predicted audio functions

(fig.3-4; col.7 line 50-67; col.8 line 17-53/the equalized audio

function is analyzed using variations of efficiency criterion as noted

in the figures) so as to easily enable a listener to determine how to

adjust the equalizer in obtaining desired sound quality in short-time

span. Thus, it would have been obvious for one of the ordinary skill

in the art to have modified the prior art with implementing such

accessing a criterion by which to statistically analyze the predicted

transfer functions as in Robinowitz so as to easily enable a listener

to determine how to adjust the equalizer in obtaining desired sound

quality in short-time span.

The combined teaching of Rabinowitz et al. and Tagami et al. as a whole, further disclose of such instructions for statistically analyzing the predicted transfer functions using the criterion at the at least two of the plurality of listening positions (fig.3; par [0027]/may be analyzed at plurality of listening positions).

Re claim 82, the machine readable medium of claim 81, where the instructions for determining potential configurations comprise instructions for receiving input for potential values of parameters for the audio system (par [0029]).

Re claim 83, the machine readable medium of claim 81, where the potential configurations comprise a plurality of potential loudspeaker locations and where the transfer functions are recorded with the loudspeaker in each of the plurality of potential loudspeaker locations (fig.3; par [0033]); where the instructions for determining potential configurations for the audio system comprise instructions for determining potential combinations of the potential loudspeaker locations (fig.4 (54); par [0031]; and where the instructions for modifying the transfer functions based on the potential configurations comprise instructions for combining the transfer functions for the listening positions for each of the potential combinations of loudspeaker locations to generate predicted transfer functions (par [0031]).

Re claim 84, the machine readable medium of claim 81, where the potential

configurations comprise potential values for the correction factors and
wherein the instructions for modifying the transfer functions based on the
potential configurations comprise instructions for modifying the transfer
functions for potential values for the correction factors to generate
predicted transfer functions for each of the potential values (fig.4 (43-44);
par [0029]).

Re claim 85, the machine readable medium of claim 84, where the correction
factors comprise gain, delay, and equalization (par [0029]; fig.3/gain and
time varying delay signal).

Re claim 86, the machine readable medium of claim 81, where the configuration
comprises a plurality of parameters; where the instructions for determining
potential configurations comprise instructions for inputting potential values
for the plurality of parameters and instructions for determining potential
combinations of the potential values of the parameters; where the
instructions for recording transfer functions comprise instructions for
recording transfer functions at each of the plurality of listening positions
with each type of potential loudspeaker in each of a plurality of potential
loudspeaker locations; and where the instructions for modifying the transfer
functions based on the potential configurations comprise instructions for
modifying the transfer functions based on the potential combinations to
generate predicted transfer functions for the potential combinations (fig.3
(20); fig.4 (58-59)).

Re claim 87 has been analyzed and rejected with respect to claim 10.

Re claim 96, the machine readable medium of claim 81, wherein the
statistical analysis indicates differences in overall sound pressure level
among the plurality of listening positions for the predicted transfer
functions (par [0031]).

Re claim 98, the machine readable medium of claim 81, where the statistical
analysis indicates efficiency of the predicted transfer functions at the
plurality of listening positions (Tagami; fig.4-5/to indicate the
efficiency).

Re claim 99; the machine readable medium of claim 81, where the statistical
analysis comprises acoustic efficiency (fig.4-5/sound quality).

Re claim 101, wherein the machine readable medium of claim 81, wherein
further comprising having the instructions for recommending at least one of
the potential configurations (par [0029]).

Re claim 107, Rabinowitz et al. disclose of an audio system comprising at
least one loudspeaker and a plurality of listening positions, a system for
analyzing potential configurations comprising: means for storing transfer
functions recorded at a plurality of listening positions (fig.1 (20)); means
for determining potential configurations for the audio system (fig.1 (22,26);
par [0029]) and means for modifying the transfer functions based on the
potential configurations so that predicted transfer functions are generated
at at least two of the plurality of listening positions, the predicted
transfer functions representing simulations for the potential configurations
of the audio system (fig.1 (18, 20); fig.4(48-59); par [0021-

0023,0027]/desired equalized frequency for different user locations
with microphone from the speaker is read on the predicted transfer
function).

However, Rabinowitz et al. fail to disclose of such means for accessing
a criterion by which to statistically analyze the predicted transfer
functions. But, Tagami et al. disclose of a system wherein the similar
concept of means for accessing a criterion by which to statistically analyze
the predicted audio functions (fig.3-4; col.7 line 50-67; col.8 line 17-
53/the equalized audio function is analyzed using variations of
criterion as noted in the figures) so as to easily enable a listener
to determine how to adjust the equalizer in obtaining desired sound
quality in short-time span. Thus, it would have been obvious for one
of the ordinary skill in the art to have modified the prior art with
implementing such means for accessing a criterion by which to statistically
analyze the predicted transfer functions so as to easily enable a
listener to determine how to adjust the equalizer in obtaining desired
sound quality in short-time span.

    The combined teaching of Rabinowitz et al. and Tagami et al. as a
whole, further disclose such means for statistically analyzing the
predicted transfer functions using the criterion at the at least two of the
plurality of listening positions (fig.3/plurality of listening positions for
analysis).

Re claim 108, the system of claim 107, where means for recording potential
configurations for the audio system comprises means for recording parameters
for the configurations, the parameters selected from the group consisting of
positions of the loudspeakers, number of loudspeakers, types of loudspeakers,
and correction factors (par [0029, 0033]).

Re claim 109, the system of claim 107, where means for statistically
analyzing comprises means for analyzing the predicted transfer functions
across the plurality of listening positions (fig.3).

Re claim 111, the audio system comprising at least one loudspeaker and a
plurality of listening positions, a system for analyzing potential
configurations comprising: storage means for storing transfer functions
recorded at the plurality of listening positions; and processor means for
determining potential configurations for the audio system, for modifying the
transfer functions based on the potential configurations so that predicted
transfer functions are generated at each of the plurality of listening
positions, the predicted transfer functions representing simulations for the
potential configurations of the audio system, for accessing a criterion by
which to statistically analyze the predicted transfer functions, and for
statistically analyzing the predicted transfer functions using the criterion
(see claim 107 rejection analysis).

Re claim 112, the system of claim 111, the combined teaching of
Rabinowitz et al. and Tagami et al. as a whole, as modified further
disclose of wherein the processor means further recommends at least one of

the potential configurations based on the statistical analysis (par

[0029]/volume with statistical analysis).

Re claim 113, the system of claim 111, where the statistical analysis is

across at least one frequency of the predicted transfer functions (fig.4-5).

Re claim 117, the audio system of claim 1, wherein statistically analyzing

the predicted transfer functions at the plurality of listening positions

comprises: analyzing for a first configuration a first predicted transfer

function at a first listening position and a second predicted transfer

function at a second listening position for at least one the criterion (fig.3

(20); par [0027; 0029, 0033]/analyzed multiple transfer functions at

plurality of listening positions and having selected configurations) and

analyzing for a second configuration a third predicted transfer function at

the first listening position and a fourth predicted transfer function at the

second listening position for the at least one criterion (fig.3 (20); par

[0027, 0029, 0033]) and selecting a configuration (par [0029, 0033]/many

configuration may be chosen).

     Thus, it would have been obvious for one of the ordinary skills in the

art to have tried in modifying such options in selecting configurations as

further including such selecting a configuration based on the statistical

analysis comprises selecting one of the first configuration or second

configuration based on the analysis of the criterion for the first

configuration and second configuration with producing no unexpected result

when determining the desired equalized pattern signal.

RE claim 119 has been analyzed and rejected similarly in view of claim 117.

4.   Claims 11-13; 21-23; 26; 54-61; 74; 78-80; 91-95; 97; 100; 102-104; 110; 118;

120-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et

al. (2003/0179891) and Tagami et al. (US 5,745,586).

Re claim 11, the audio system of claim 1, wherein the statistical

analysis is selected from the group consisting of mean variance,

standard deviation (fig.4; col.7 line 34-41; col.10 line 25-30; col.14

line 10-20/from the plurality of input sound, statistical analysis is

made which consist of mean variance and standard deviation).

     Similarly, it would have been obvious for one of the ordinary

skill in the art to have tried in modifying such standard deviation

and variance as further including such a mean spatial standard and

spatial variance deviation so as to determine the average value and

variance value for the respective speaker position in determining the

sound quality value.

Re claim 54, the method for selecting a configuration for an audio system,

the method comprising: recording transfer functions a plurality of listening

positions in the audio system; determining potential configurations of the

audio system; modifying the transfer functions based on the potential

configurations so that predicted transfer functions are generated at each of

at least two of the plurality of listening positions for each of the
potential configurations of the audio system, the predicted transfer
functions representing simulations for the potential configurations of the
audio system; accessing a criterion by which to statistically analyze the
predicted transfer functions; statistically analyzing the predicted transfer
functions using the criterion; and selecting a configuration based on the
statistical analysis to improve for the criterion at the at least two of the
plurality of listening positions, where recording the transfer functions
comprises recording the transfer functions at a plurality of listening
positions; and where the statistical analysis is selected from the group
consisting of mean spatial variance, mean spatial standard deviation, mean
spatial envelope, and mean spatial maximum average (see claim 11 rejection
analysis).

Similarly Re claim 12; 26; 110 have been analyzed and rejected with
respect to claim 11.

Re claim 13, the audio system of claim 12, the combined teaching of
Rabinowitz et al. and Tagami et al. as a whole, as modified would have
further teach of such wherein the mean spatial variance is based on an
average of spatial variance across the listening positions for a
plurality of frequencies (Rab; fig.3 (20); par [0027, 0029]/signals
across many listening positions for a plurality of frequencies).

Re claims 21-23 have been analyzed and rejected with respect to claim 11-13.

Re claims 55-56 have been analyzed and rejected with respect to claim 12-13.

Re claim 57, the method of claim 27, where the statistical analysis indicate
the predicted transfer functions. But, Rabinowitz fail to disclose of the
specific indicating flatness of the transfer function. But, it would have
been obvious for one of the ordinary skills in the art to have such transfer
function as further modified to indicate flatness of the transfer function so
to determine the smoothness and thus improved equalized audio signal.

Re claim 58, the method of claim 27, wherein the statistical analysis,
is selected from the group consisting of standard deviation of the
average (col.7 line 33-40; col.8 line 35-50).

Similarly, it would have been obvious to have tried in modified
such standard deviation as specifically being standard deviation of
the spatial average so as to analyzed the correlation coefficient for
the respective loudspeaker location in determining the sound quality.

Re claim 59, the method of claim 27, where the statistical analysis is
selected from the group consisting of amplitude variance and amplitude
standard deviation (col.7 line 33-40; col.8 line 35-50).

RE claim 60, the method of claim 27, where the statistical analysis
indicates differences in overall sound pressure level among the
plurality of listening positions for the predicted transfer functions

(fig.3 (20); par [0027; 0031]/include difference among the listening

positions).

Re claim 61, the method of claim 27, where the statistical analysis is

selected from the group consisting of variance of mean levels;

standard deviation of mean levels (col.7 line 33-42).

    Re claim 74, the method of claim 27, where the statistical

analysis comprises mean overall level (col.7 line 33-42; col.16 line

10-35).

RE claim 78, the method of claim 77, where a plurality of statistical

analyses are performed; and where selecting a configuration is based

on weighting the plurality of statistical analyses (col.7 line 35-

40/the summation of the frequency signal).

Re claim 79, the method of claim 27, where the statistical analysis

ranks the predicted transfer functions based on at least one metric

(Tag; fig.3-4/rank based on a value metric), thus, the combined

teaching of Rabinowitz et al. and Tagami et al. as a whole, would have

further incorporating of such selecting a configuration comprises

selecting a configuration based on the ranking (par [0029, 0033]/the

different configuration).

Re claim 80, the method of claim 79, wherein selecting a configuration
based on the ranking (fig.3-4). Similarly I would have been obvious
for one of the ordinary skills in the art to have tried in having such
ranking with further comprises selecting an optimal value based on a
highest ranked predicted transfer function so as to select the optimal
quality sound signal as desired.

Similarly Re claims 91-93 have been analyzed and rejected with respect
to claims 57; 11-12.

Re claim 94, the machine readable medium of claim 81, where the
statistical analysis indicates how much equalization is necessary for
the predicted transfer functions (col.1 line 45-51; col.7 line 15-20;
col.8 line 40-53/equalization for the sound signal).

Similarly Re claim 95, 97 has been analyzed and rejected with respect
to claim 21, 92.

Re claim 100, the machine readable medium of claim 81, where the
statistical analysis comprises mean overall level (col.7 line 33-42).

Similarly Re claims 102-104 has been analyzed and rejected with
respect to claims 78-80.

Similarly Re claim 118 has been analyzed and rejected with respect to
claim 57.

Re claim 121, the audio system of claim 1, where the criterion is
selected from the group consisting of flatness, consistency,
efficiency, and smoothness (fig.3-4/sound quality adjectives as in
efficiency/consistency).

Re claim 122, the audio system of claim 1, where the statistical
analysis comprises variance of level (col.7 line 35-42; col.16 line
15-40.

    Similarly the combined teaching of Rabinowitz et al. and Tagami
et al. as a whole, would have further disclose of such variance across
the at least two of the plurality of listening positions(fig.3; par
[0027]/analyzed signal for plurality of listening positions).

Re claim 123, the audio system of claim 122, similarly, it would have
been obvious for one of the ordinary skills in the art to have
modified such variance with further implementing having the variance
comprises spatial variance across the at least two of the plurality of
listening positions so as to determined the quality of sound signal as
per loudspeaker location.

Similarly, Re claims ({124-126}; {127-129}; {130-132}; {133-135}) have
been analyzed and rejected with respect to claims 121-123.

5.   Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Greenberger

(US 5,870,484).

Re claim 45, the method of claim 44, wherein having the potential type of

loudspeakers, but, the combined teaching of Rabinowitz and Tagami et al. as a

whole, fail to disclose of wherein the types of loudspeakers comprise a

dipole and monopole loudspeakers. But, Greenberger disclose of the similar

concept of wherein the types of loudspeakers comprise a dipole and monopole

loudspeakers (col.2 line 55-67; col.15 line 35-50) so as to vary the

radiation pattern of the output device. Thus, it would have been obvious for

one of the ordinary skills in the art to have modified the prior art with

implementing the types of loudspeakers comprise a dipole and monopole

loudspeakers so as to vary the radiation pattern of the output device.

6.   Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Norris et al.

(US 6,611,603).

Re claim 31, the method of claim 30, but, the combined teaching of Rabinowitz et al.

and Tagami et al. as a whole, fail to disclose of wherein the transfer function measures

amplitude and phase at a single frequency or multiple frequencies.

But, Norris et al. disclose of a system wherein the similar concept of having such

transfer function measures amplitude and phase at a single frequency or multiple

frequencies (fig.5-9 col. 4 line 35-50) so as to accurately approximate the transfer

function in certain frequency bands during localization. Thus, it would have been

obvious for one of the ordinary skill in the art to have modified the prior art with

incorporating the transfer function measures amplitude and phase at a single frequency

or multiple frequencies so as to accurately approximate the transfer function in certain

frequency bands during localization.

7.   Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Rabinowitz et al. ("2003/0179891") and Tagami et al. (US 5,745,586) and Kim (US

5,717, 465).

Re claim 67, the method of claim 66, wherein the acoustic efficiency comprise a mean

overall level, but, the combined teaching of Rabinowitz et al. and Tagami et al. as a

whole, fail to disclose of such mean overall level divided by a total drive level for the

transfer function.

But, Kim disclose of a system wherein having such mean overall level divided by a total drive level (col.5 line 5-15; col.6 line 10-25) so as to determine the improve efficiency of the signal. Thus, it would have been obvious for one of the ordinary skills in the art to have modified the prior art with implementing the mean overall level divided by a total drive level so as to determine the improve efficiency of the signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/D. P./
Examiner, Art Unit 2614

/Xu Mei/
Primary Examiner, Art Unit 2614